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10/614,397

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Nicholas H. Tripsas

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02/24/2004

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EXAMINER

GUERRERO, MARIA F

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/614,397

Applicant(s)

TRIPSAS ET AL.

Examiner

Maria Guerrero

Art Unit

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14, 15, 17 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 12 and 13 is/are rejected.
- 7) ☒ Claim(s) 5, 10, 11, 16, 18 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This Office Action is the First Action on the merits.

Claims 1-20 are pending.

#### ***Specification***

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### ***Claim Objections***

3. Claims 16 and 20 are objected to because of the following informalities:

Claim 16 recites: "wherein forming a polymer"; independent claim 14 recites "growing a polymer material". Claim 20 recites "means for" followed by process limitation that can define the claim without using the means terminology. Clarification is requested because it is not clear if applicant intended to apply 35 U.S.C. 112, sixth paragraph. Appropriate correction is required.

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Claim 18 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper

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dependent form, or rewrite the claim(s) in independent form. Claim 18 recites the method of claim 14 in line 1; the method of claim 1 in lines 4-5.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 contains the trademarks/trade names "Hastelloy, Kovar, Monel, Inconel".

Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe alloys and, accordingly, the identification/description is indefinite.

Claim 13 recites forming at least one of plugs, shallow trench isolation regions....below the polymer material in the via. The claim is vague and indefinite

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because the claim does not specify how this is done after the polymer material is formed in the via.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ichikawa et al. (U.S. 6,344,412).

Ichikawa et al. teaches providing a semiconductor substrate (201) having at least one metal-containing layer (202a, 202b)(Fig. 2d, col. 2, lines 1-2, col. 4, lines 25-30). Ichikawa et al. discloses forming at least one dielectric layer (206)(oxide) over the metal-containing layer and forming at least one via in the dielectric layer to expose at least a portion of the metal-containing layer (Fig. 2d, col. 2, lines 1-7, 45-50, col. 4, lines 25-35). Ichikawa et al. shows forming a polymer material (207a, 207b) in a lower portion of the via and forming metal traces (205a, 205b) (top electrode material) in an upper portion of the via (Fig. 2d, col. 4, lines 15-35).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. (U.S. 6,344,412) in view of Watanabe et al. (U.S. 6,214,749).

Regarding claims 4 and 8, Ichikawa et al. does not specifically show employing copper, of any of the metal as claimed. However, Ichikawa et al. suggested that any conventional conductor could be used. In addition, Watanabe et al. shows forming the wiring layer and the electrodes using aluminum, copper, gold, silicide, titanium nitride, etc. (col. 19, lines 35-40).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Ichikawa et al. reference by including the conductive materials suggested by Watanabe et al. in order to complete the structure with conventional conductor material. The modification is proper because Watanabe et al. has been cited on Ichikawa et al. reference.

7. Claims 2 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. (U.S. 6,344,412) in view of Lee et al. (U.S. 6,214,423).

Regarding claims 2 and 12-13, Ichikawa et al. does not specifically show employing a damascene process, forming a barrier metal layer, forming shallow trench

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isolation regions. However, Lee et al. shows employing a damascene process, forming a barrier metal layer, forming shallow trench isolation regions as part of the conventional process using multilevel metallization system (col. 2, lines 34-37, col. 7, lines 65-67, col. 8, lines 1-15, 28-30, col. 9, lines 10-15).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Ichikawa et al. reference by including the damascene process, the barrier metal layer, and the shallow trench isolation regions as taught by Lee et al. in order to complete a multilevel metallization structure with better protection and better isolation.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. (U.S. 6,344,412) in view of Bailey (U.S. 6,430,810).

Regarding claim 6, Ichikawa et al. does not specifically show the polymer material being polyanilines, polythiophenes, polyphenylenevinylenes, polypyrroles etc. However, Bailey is cited as evidence to show that these materials are well known in the art (col. 8, lines 60-62, col. 9, lines 1-6).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Ichikawa et al. reference by including the use of polyanilines, polythiophenes, polyphenylenevinylenes, or polypyrroles as taught by Bailey in order to reduce cost (Bailey, col. 4, lines 36-37).

***Allowable Subject Matter***

9. Claims 14-15, 17, and 19 are allowed.

Claim 5 and 10-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: in the examiner's opinion it would not have been obvious to a person of ordinary skill in the art at the time of the invention to modify the cited references in order to include the combination of to expose at least a portion of the at least one copper bit line and copper pad, growing a polymer material in a lower portion of the via, forming a top electrode material layer in upper portion of the via, forming a word line over at least the top electrode layer among other limitations on the claims.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hively (U.S. 5,955,762), Besser et al. (U.S. 6,239,494), Leuschner (U.S. 6,614,048), Oglesby et al. (U.S. 6,656,763), Li et al. (U.S. 6,624,457), and Ichikawa et al. (U.S. 6,534,422) teach several steps pertinent to applicant's disclosure.

The recitation "fabricating a polymer memory device" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a




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process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Guerrero whose telephone number is 571-272-1837.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to 571-272-2800.

  
Maria Guerrero  
Primary Examiner  
January 29, 2004